

[CLAIMS]

[Claim 1] A remote monitor for a home appliance, the remote monitor being connected to at least one home appliance with a predetermined communication system for displaying, and controlling of a state of the home appliance at a place far from the home appliance, comprising:

a case forming an outside appearance of the remote monitor, including a lower case, and an upper case detachably mounted on an upper side of the lower case, the upper case having a window; and

a control board in the case, the control board having various electronic components mounted thereon.

[Claim 2] The remote monitor as claimed in claim 1, wherein the control board includes;

a communication modem board for transmission/reception of data to/from the home appliance,

a display board mounted on the communication modem board fixedly, or detachably for displaying a state of the state of the home appliance to an outside.

[Claim 3] The remote monitor as claimed in claim 2, wherein one of the communication modem board or the display board includes male terminal pins, and the other one includes female terminal pins opposite to the male terminal pins for placing in the female terminal pins.

[Claim 4] The remote monitor as claimed in claim 2, further comprising at least one supporting pin passed through the communication modem board and supporting the display board.

[Claim 5] The remote monitor as claimed in claim 2, wherein the display board includes;

an LCD segment fastened thereto with screws, or hooks for display of state information, such as a progress of operation and cycle error of the home appliance, to an outside with numerals or characters.

[Claim 6] The remote monitor as claimed in claim 1, wherein the communication system is a power line communication system for transmission/reception of data through a power line.

[Claim 7] The remote monitor as claimed in claim 1, wherein the upper case includes fastening bosses projected downward, and

the lower case includes fastening holes in correspondence to the fastening bosses, wherein the upper case and the lower case are coupled at a time as fastening members are fastened to the fastening bosses through the fastening holes, respectively.

[Claim 8] The remote monitor as claimed in claim 7, wherein the fastening bosses are formed at corners of a lower surface of the upper case, which is an unexposed surface.

[Claim 9] The remote monitor as claimed in claim 7, wherein the fastening member is a fastening screw to be fastened to the fastening boss as the fastening screw is fastened to a hole in the fastening boss while forming a thread.

[Claim 10] The remote monitor as claimed in claim 7, wherein the upper case includes a shrinkage preventive groove for preventing the fastening boss from shrinking at the time of injection molding with a mold.

[Claim 11] The remote monitor as claimed in claim 10, wherein the shrinkage preventive grooves are formed in the upper surface which is an exposed surface of the upper case, each in a shape of a ring in correspondence to the fastening bosses.

[Claim 12] The remote monitor as claimed in claim 1, further comprising a see-through sheet on an upper surface of the upper case, which is an exposed surface, for see-through an inside through the window, and a protective sheet on an upper surface of the see-through sheet having a see-through window in correspondence to the window on the upper case.

[Claim 13] The remote monitor as claimed in claim 12, wherein the see-through sheet and the protective sheet have sizes in correspondence to the upper surface of the upper case, respectively.

[Claim 14] The remote monitor as claimed in claim 12, wherein the see-through sheet is provided to be placed on the upper surface of the upper case, with a size corresponding to a size of the window on the upper case, and

the protective sheet has a size in correspondence to the upper surface of the upper case.

[Claim 15] The remote monitor as claimed in claim 12, wherein the see-through sheet is formed of PET (polyethylene terephthalate).

[Claim 16] The remote monitor as claimed in claim 12, wherein the protective sheet is formed of a light metal, such as aluminum.

[Claim 17] The remote monitor as claimed in claim 12, wherein the upper case includes an interference preventive groove in the upper surface of the upper case for preventing interference of burrs left at an edge of the protective sheet.

[Claim 18] The remote monitor as claimed in claim 1, wherein the upper case includes a button hole, with an operation button provided therein for being brought into contact with a switch on the control board as the operation button is pressed, and returning to an original position after being pressed.

[Claim 19] The remote monitor as claimed in claim 18, wherein the operation button includes;

a pressing portion passed through the button hole and exposed to an outside of the upper surface of the upper case, and

a mounting portion formed as one body with the pressing portion at a lower portion for being held at an underside of the upper case around the button hole.

[Claim 20] The remote monitor as claimed in claim 19, wherein the mounting portion includes elastic ribs of a plurality of slots for providing restoring force to the operation button.

[Claim 21] The remote monitor as claimed in claim 19, wherein the mounting portion includes a contact projection on an underside to be in contact with a switch on the control board.

[Claim 22] The remote monitor as claimed in claim 19, wherein the mounting portion is hooked to hooks on an underside of the upper case.

[Claim 23] The remote monitor as claimed in claim 19, wherein the mounting portion includes an interference avoidance slot at a circumference for preventing the operation button from interfering with an electronic component on the control board.

[Claim 24] The remote monitor as claimed in claim 23, wherein the interference avoidance slot is formed at a portion of the circumference where the mounting portion interferes with the electronic component on the control board on both sides of the circumference symmetrically.

[Claim 25] The remote monitor as claimed in claim 18, wherein the upper case

includes a downward stepped portion around the button hole, and the mounting portion of the operation button includes a counter stepped portion projected opposite to the stepped portion such that the counter stepped portion is in close contact with an underside of the upper case.

[Claim 26] The remote monitor as claimed in claim 25, wherein the stepped portion and the counter stepped portion have identical lengths.

[Claim 27] The remote monitor as claimed in claim 1, wherein one of the upper case and the lower case includes a rim, and the other one includes a groove in conformity with the rim.

[Claim 28] The remote monitor as claimed in claim 27, wherein the rim and groove are formed along, and throughout opposite upper and lower circumferences.

[Claim 29] The remote monitor as claimed in claim 27, wherein the circumference of the case having the groove has double circumferences with an inner circumference positioned on an inner side of the groove and an outer circumference positioned on an outer side of the groove.

[Claim 30] The remote monitor as claimed in claim 29, wherein the inner circumference and the outer circumference have projection lengths different from each other.

[Claim 31] The remote monitor as claimed in claim 30, wherein the inner circumference has the projection length longer than the projection length of the outer circumference.

[Claim 32] The remote monitor as claimed in claim 27, wherein the groove includes a sealing portion where edges of an end of the rim are pressed down thereon when the groove is engaged with the projection.

[Claim 33] The remote monitor as claimed in claim 32, wherein the sealing portion is sloped surfaces which are to be pressed down by the edges of the rim.

[Claim 34] The remote monitor as claimed in claim 1, wherein one of the upper case and the lower case includes hooks and the other one includes hook holes in conformity with the hooks.

[Claim 35] The remote monitor as claimed in claim 34, wherein the lower case includes slide portions at the upper surface which is an unexposed surface of the lower case,

for removing a mold without interference with the hooks at the time of injection molding of the lower case with the mold.

[Claim 36] The remote monitor as claimed in claim 35, wherein the slide portion is a flat portion extended from an edge of the upper surface of the lower case to a circumference of the lower case under the hook.

[Claim 37] The remote monitor as claimed in claim 1, wherein the lower case includes guide ribs for placing the control board at a position spaced a predetermined height from the upper surface of the lower case, and preventing the control board from shaking.

[Claim 38] The remote monitor as claimed in claim 36, wherein the guide rib has an “L” shaped substantially.

[Claim 39] The remote monitor as claimed in claim 1, wherein the upper case includes at least one upper supporting boss projected therefrom for supporting the control board.

[Claim 40] The remote monitor as claimed in claim 1, wherein the lower case includes at least one lower supporting boss projected therefrom for supporting the control

board.

[Claim 41] The remote monitor as claimed in claim 1, further comprising securing means for securing the case to a wall at a place far from the home appliance.

[Claim 42] The remote monitor as claimed in claim 41, wherein the securing means includes;

a mounting portion projected outward from a bottom of the lower case which is an exposed side of the lower case, and

a hanger to be fixedly secured to the wall far from the home appliance for placing the mounting portion thereon.

[Claim 43] The remote monitor as claimed in claim 42, wherein one of the mounting portion and the hanger includes guide projections, and the other one includes a seating portion having guide grooves for slidably placing the guide projections therein, respectively.

[Claim 44] The remote monitor as claimed in claim 42, wherein the hanger has a size smaller than a size of the lower case.

[Claim 45] The remote monitor as claimed in claim 1, further comprising a speaker

for announcing a state of progress of the home appliance with a designated sound.

[Claim 46] A remote monitor for a home appliance, the remote monitor being connected to at least one home appliance with a predetermined communication system for displaying, and controlling of a state of the home appliance at a place far from the home appliance, comprising:

a case forming an outside appearance of the remote monitor, including a lower case, an upper case detachably mounted on an upper side of the lower case, the upper case having a window, and an outer case detachably mounted on an upper side of the upper case, the outer case having a display window in correspondence to the window; and

a control board in the case, the control board having various electronic components mounted thereon.

[Claim 47] The remote monitor as claimed in claim 46, further comprising a see-through sheet on an upper surface of the outer case, which is an exposed surface, for see-through an inside through the display window, and a protective sheet on an upper surface of the see-through sheet having a see-through window in correspondence to the display window on the outer case.

[Claim 48] The remote monitor as claimed in claim 47, wherein the see-through sheet and the protective sheet have sizes in correspondence to the upper surface of the upper case, respectively.

[Claim 49] The remote monitor as claimed in claim 47, wherein the see-through sheet is provided to be placed on the upper surface of the outer case, with a size corresponding to a size of the display window on the outer case, and

the protective sheet has a size in correspondence to the upper surface of the outer case.

[Claim 50] The remote monitor as claimed in claim 47, wherein the see-through sheet is formed of PET (polyethylene terephthalate).

[Claim 51] The remote monitor as claimed in claim 47, wherein the protective sheet is formed of a light metal, such as aluminum.

[Claim 52] The remote monitor as claimed in claim 47, wherein the outer case includes an interference preventive groove in the upper surface of the outer case for preventing interference of burrs left at an edge of the protective sheet.